

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2002-009393

(43)Date of publication of application : 11.01.2002

(51)Int.Cl. H01S 5/183
H01S 5/028

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(30)Priority

Priority number : 2000117973 Priority date : 19.04.2000 Priority country : JP

(54) VERTICAL RESONATOR TYPE SURFACE EMITTING SEMICONDUCTOR LASER AND MANUFACTURING METHOD THEREOF

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a highly reliable vertical resonator type surface emitting semiconductor laser which is low in resistance and can obtain a high output and moreover can stably emit a laser beam which never reduces its output with time.

SOLUTION: A vertical resonator type surface emitting semiconductor laser is constituted of a first semiconductor multilayer film reflecting mirror, an active layer, a second semiconductor multilayer film reflecting mirror, and a contact electrode having an aperture for emitting a laser beam on a semiconductor substrate. The aperture is covered with a protective film for preventing damage in the manufacturing process of the laser subsequent to the formation of the contact electrode, or the protective film is provided on the second semiconductor multilayer film reflecting mirror. The contact electrode is provided so as to overlap with the surface of the protective film and the aperture is formed in the protective film. A state that a conductivity type contact layer is positioned under the lower layer of the protective film as seen from the thickness direction of the protective film, and is desirably provided between the second semiconductor multilayer film reflecting mirror and the contact electrode.

LEGAL STATUS

[Date of request for examination] 14.04.2004

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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